TEST RESULTS OF GRADATION FOR GSB
(IS 2386:(Part 1) 1963 (RA2011)

Lab ID	:	CP-RW-2019-08-23-80 **Date: 15-07-19**
Customer	:	Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Address	:	Yelahanka Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drain at Naidu Layout in Chowdeshwari Ward No.02.
Agency	:	Sri.A.Kumar Reddy, No.44, Kaverinagara, A Block, Bangalore.
Customer Reference	:	EE(YNK.D)E-PMT-01/W.O/32/2019-20
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	13-07-19
Type of Mix	:	GSB (Granular Sub Base)
Date of test	:	13-07-19
Oven Dry Weight	:	10000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec. Limit Vide Table 400.1 MORTH Specification
75	0	0	0	100	100
53	997	997	9.97	90.03	80-100
26.5	1685	2682	26.82	73.18	55-90
9.5	1292	3974	39.74	60.26	35-65
4.75	1490	5464	54.64	45.36	25-55
2.36	1764	7228	72.28	27.72	20-40
0.425	1666	8894	88.94	11.06	10-25
0.075	1106	10000	100.00	0.00	0-5

TESTS ON FILLER SCREEN MATERIALS

Sl no	Particulars	Test results	Spec.Limit Vide Table
1	Liquid Limit, %	21.33%	Maximum 25
2	Plasticity index, %	Non plastic	Maximum 6

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TEST RESULTS OF GRADATION FOR WMM

Lab ID	:	**CP-RW-2019-08-23-80**	**Date: 20-07-19**
Customer	:	Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.	
Address	:	Yelahanka Sub Division, BBMP, Bangalore.	
Project Name	:	Improvements to Roads and Drain at Naidu Layout in Chowdeshwari Ward No.02.	
Agency	:	Sri.A.Kumar Reddy, No.44, Kaverinagara, A Block, Bangalore.	
Customer Reference	:	EE(YNK.D)E-PMT-01/W.O/32/2019-20	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	18-07-19	
Type of Mix	:	WMM (Wet Mix Macadam)	
Date of test	:	18-07-19	
Oven Dry Weight	:	11000 Grams	

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	315	315	2.9	97.1	95-100
22.4	2259	2574	23.4	76.6	60-80
11.2	2179	4753	43.2	56.8	40-60
4.75	2251	7004	63.7	36.3	25-40
2.36	1621	8625	78.4	21.6	15-30
0.6	623	9248	84.1	15.9	8-22
0.075	1338	10586	96.2	3.8	0-5

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TEST REPORT OF AGGEGRATE IMPACT VALUE
IS: 2386 Part IV

Lab ID : CP-RW-2019-08-23-80 **Date: 20-07-19**

Customer : Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.

Address : Yelahanka Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drain at Naidu Layout in Chowdeshwari Ward No.02.

Agency : Sri.A.Kumar Reddy, No.44, Kaverinagara, A Block, Bangalore.

Customer Reference : EE(YNK.D)E-PMT-01/W.O/32/2019-20

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 18-07-19

Type of Mix : Coarse Aggregate for WMM (Wet Mix Macadam)

Date of test : 18-07-19

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	300.2	300.2
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	73.9	74.0
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	225.9	225.8
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.4	0.4
5	Aggregate impact value	(B/A)*100	24.6	24.7
6	Aggregate impact value (Mean of two tests)	Pecentage	24.6	

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DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2019-08-23-80** **Date: 20-07-19**
Customer	:	Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Address	:	Yelahanka Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drain at Naidu Layout in Chowdeshwari Ward No.02.
Agency	:	Sri.A.Kumar Reddy, No.44, Kaverinagara, A Block, Bangalore.
Customer Reference	:	EE(YNK.D)E-PMT-01/W.O/32/2019-20
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	18-07-19
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test	:	18-07-19

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	12.8%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	12.5%	
Combined Flakiness and Elongation Index for WMM	25.3%	

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TEST RESULTS OF GRADATION FOR DBM
(IS 2386:(Part 1) 1963 (RA2011)

Lab ID : CP-RW-2019-08-23-80 **Date: 31-07-19**

Customer : Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.

Address : Yelahanka Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drain at Naidu Layout in Chowdeshwari Ward No.02.

Agency : Sri.A.Kumar Reddy, No.44, Kaverinagara, A Block, Bangalore.

Customer Reference : EE(YNK.D)E-PMT-01/W.O/32/2019-20

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 29-07-19

Type of Mix : DBM-Plant (Dense Bituminous Macadam)

Date of test : 29-07-19

Weight of Sample : 5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-10 (grading -2)
37.5	0	0	0	100	100
26.5	172	172	3.44	96.56	90-100
19	1013	1185	23.70	76.30	71-95
13.2	520	1705	34.10	65.90	56-80
4.75	1150	2855	57.10	42.90	38-54
2.36	710	3565	71.30	28.70	28-42
0.3	1014	4579	91.58	8.42	7-21
0.075	272	4851	97.02	2.98	2-8
PAN	149	5000	0.00	0	0

AE-2

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR DENSE BITUMINOUS MACADAM

Lab ID	:	**CP-RW-2019-08-23-80**	**Date: 01-08-19**
Customer	:	Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.	
Address	:	Yelahanka Sub Division, BBMP, Bangalore.	
Project Name	:	Improvements to Roads and Drain at Naidu Layout in Chowdeshwari Ward No.02.	
Agency	:	Sri.A.Kumar Reddy, No.44, Kaverinagara, A Block, Bangalore.	
Customer Reference	:	EE(YNK.D)E-PMT-01/W.O/32/2019-20	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	29-07-19	
Type of Mix	:	DBM (Dense Bituminous Macadam)	
Date of test	:	29-07-19	

Table 500-6 : Physical Requirements fo Coarse Aggregate for Dense Bituminous Macadam

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	12.4	Combined Flakiness & Elongation Index for DBM is Maximum 35%	IS:2386 Part I
	Elongation Index	11.8		
Strength	Aggregate Impact Value	22.2	Maximum 30%	IS:2386 Part IV
Specific gravity	Specific gravity	2.65	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.16	Maximum 2%	IS:2386 Part III

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TESTS RESULTS ON STABILITY OF MIX

Lab ID	:	**CP-RW-2019-08-23-80** **Date: 01-08-19**
Customer	:	Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Address	:	Yelahanka Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drain at Naidu Layout in Chowdeshwari Ward No.02.
Agency	:	Sri.A.Kumar Reddy, No.44, Kaverinagara, A Block, Bangalore.
Customer Reference	:	EE(YNK.D)E-PMT-01/W.O/32/2019-20
Source of Sample	:	Hot Mix Plant, Bangalore
Sample Condition	:	Satisfactory
Date of Receipt	:	29-07-19
Type of Mix	:	DBM (Dense Bituminous Mecadam)
Date of test	:	29-07-19

The results of the tests conducted on the Dense Bituminous Macadam mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.29	11.82	9KN(Min)
2	Marshal flow at 60°C, mm	3.54	3.87	2-4
3	Percent air Voids	4.56	4.17	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.54	14.76	13-15
5	Percent Voids filled with Bitumen(VFB %)	68.98	70.28	65-75
6	Density, g/cc	2.42	2.40	–

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	:	**CP-RW-2019-08-23-80** **Date: 01-08-19**
Customer	:	Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Address	:	Yelahanka Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drain at Naidu Layout in Chowdeshwari Ward No.02.
Agency	:	Sri.A.Kumar Reddy, No.44, Kaverinagara, A Block, Bangalore.
Customer Reference	:	EE(YNK.D)E-PMT-01/W.O/32/2019-20
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	29-07-19
Type of Mix	:	DBM(Dense Bitumnous Macadam)
Date of test	:	29-07-19

Type of Binder	:	60/70
% of Binder Used	:	5.0%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	98.2	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR DBM (IS 2386:(Part 1) 1963 (RA2011)

Lab ID	:	**CP-RW-2019-08-23-80**	**Date: 14-08-19**
Customer	:	Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.	
Address	:	Yelahanka Sub Division, BBMP, Bangalore.	
Project Name	:	Improvements to Roads and Drain at Naidu Layout in Chowdeshwari Ward No.02.	
Agency	:	Sri.A.Kumar Reddy, No.44, Kaverinagara, A Block, Bangalore.	
Customer Reference	:	EE(YNK.D)E-PMT-01/W.O/32/2019-20	
Source of Sample	:	Sample supplied by Agency	
Date of Receipt	:	13-08-19	
Type of Mix	:	DBM (Dense Bituminous Macadam)	
Date of test	:	13-08-19	

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	475	476
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	4.8	4.8
4	Average percentage	%	4.8	

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TEST RESULTS OF GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2007)

Lab ID : CP-RW-2019-08-23-80 **Date: 07-08-19**

Customer : Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.

Address : Yelahanka Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drain at Naidu Layout in Chowdeshwari Ward No.02.

Agency : Sri.A.Kumar Reddy, No.44, Kaverinagara, A Block, Bangalore.

Customer Reference : EE(YNK.D)E-PMT-01/W.O/32/2019-20

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 05-08-19

Type of Mix : BC-Plant (Bituminous Concrete)

Date of test : 05-08-19

Oven Dry Weight : 5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-17(grading-2)
19	0	0	0.0	100.0	100
13.2	89	89	1.8	98.2	90-100
9.5	702	791	15.8	84.2	70-88
4.75	895	1686	33.7	66.3	53-71
2.36	587	2273	45.5	54.5	42-58
1.18	492	2765	55.3	44.7	34-48
0.6	503	3268	65.4	34.6	26-38
0.3	528	3796	75.9	24.1	18-28
0.15	458	4254	85.1	14.9	12-20
0.075	350	4604	92.1	7.9	4-10
PAN	396	5000	100	0.0	0

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

Lab ID	:	**CP-RW-2019-08-23-80** **Date: 08-08-19**
Customer	:	Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Address	:	Yelahanka Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drain at Naidu Layout in Chowdeshwari Ward No.02.
Agency	:	Sri.A.Kumar Reddy, No.44, Kaverinagara, A Block, Bangalore.
Customer Reference	:	EE(YNK.D)E-PMT-01/W.O/32/2019-20
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	05-08-19
Type of Mix	:	BC (Bituminous Concrete)
Date of test	:	05-08-19

Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	12.4	Combined Flakiness & Elongation Index for BC is Maximum 35%	IS:2386 Part I
	Elongation Index	11.8		
Strength	Aggregate Impact Value	22.1	Maximum 24%	IS:2386 Part IV
Specific gravity	Specific gravity	2.68	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.21	Maximum 2%	IS:2386 Part III

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)

Lab ID	:	CP-RW-2019-08-23-80
Customer	:	Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Address	:	Yelahanka Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drain at Naidu Layout in Chowdeshwari Ward No.02.
Agency	:	Sri.A.Kumar Reddy, No.44, Kaverinagara, A Block, Bangalore.
Customer Reference	:	EE(YNK.D)E-PMT-01/W.O/32/2019-20
Source of Sample	:	Sample supplied by Agency
Date of Receipt	:	17-08-19
Type of Mix	:	BC (Bituminous Concrete)
Date of test	:	17-08-19

Date: 19-08-19

SLno	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	469	470
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	6.2	6.0
4	Average percentage	%	6.1	

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Lab ID : CP-RW-2019-08-23-80 **Date: 19-08-19**

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 469

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.9	99.1	90-100
9.5	62	66	14.1	85.9	70-88
4.75	112	178	38.0	62.0	53-71
2.36	88	266	56.7	43.3	42-58
1.18	29	295	62.9	37.1	34-48
0.6	11	306	65.2	34.8	26-38
0.3	46	352	75.1	24.9	18-28
0.15	45	397	84.6	15.4	12-20
0.075	45	442	94.2	5.8	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 470

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.9	99.1	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.9	62.1	53-71
2.36	88	266	56.6	43.4	42-58
1.18	29	295	62.8	37.2	34-48
0.6	11	306	65.1	34.9	26-38
0.3	46	352	74.9	25.1	18-28
0.15	45	397	84.5	15.5	12-20
0.075	35	432	91.9	8.1	4-10

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Samples will be disposed after 90 days from the date of issue of test certificate

AE-02

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R KARTHIK RECHAN
Authorized Signatory
Quality Manager

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Format No: CP/TF/01

TEST REPORT ON BITUMEN

Lab ID	:	**CP-RW-2019-08-23-80**	**Date: 26-07-19**
Customer	:	Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.	
Address	:	Yelahanka Sub Division, BBMP, Bangalore.	
Project Name	:	Improvements to Roads and Drain at Naidu Layout in Chowdeshwari Ward No.02.	
Agency	:	Sri.A.Kumar Reddy, No.44, Kaverinagara, A Block, Bangalore.	
Customer's Reference	:	EE(YNK.D)E-PMT-01/W.O/32/2019-20	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	25-07-19	
Sample Type	:	Bitumen	
Reference to BIS codes	:	IS: 1201-1220(1978) (Reaffirmed-2004)	
Date of test	:	25-07-19	

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	64	60 to 70
2	Softening Point, °C	51.2	Min. 40°C
3	Ductility, cm	98	Min. 75cm
4	Flash point, °C	248	Min. 220°C
	Fire point, °C	272	

Note:-
The results pertain to the samples received and tested.
All information Furnished by Customer/ Representative
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****End of Report****

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DETERMINATION OF RATE OF SPREAD TACK COAT

Lab ID	:	**CP-RW-2019-08-23-80** **Date: 19-08-19**
Customer	:	Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Address	:	Yelahanka Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drain at Naidu Layout in Chowdeshwari Ward No.02.
Agency	:	Sri.A.Kumar Reddy, No.44, Kaverinagara, A Block, Bangalore.
Customer Reference	:	EE(YNK.D)E-PMT-01/W.O/32/2019-20
Sample Condition	:	Satisfactory
Date of Receipt	:	17-08-19
Type of Mix	:	Tack coat
Date of test	:	17-08-19

SLNo	Determination	Unit	TEST 1	TEST 2
1	Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
2	Area of Plate (a)	Sq.mtr	0.09	0.09
3	Initial Wt of empty Plate (b)	Kg	0.78	0.748
4	Final weight of plate after application of tack Coat (c)	Kg	0.803	0.771
5	Weight of tack Coat (d=c-b)	Kg	0.023	0.023
6	Rate of spread of tack coat	Kg/sq.m	0.256	0.256
7	Average	Kg/sq.m	0.256	
8	Specified Limit	Kg/sq.m	0.250 Kg/sq.m	

Note:-
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